

# Age and Regulatory Focus Determine Preferences for Health-Related Role Models

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The authors hypothesized that the effectiveness of role models varies across the adult life span because of differences in health-related regulatory orientations. Because young adults have strong health-related promotion orientations, they should be motivated by positive models who illustrate the benefits of good health. Because older adults have more balanced health-related promotion and prevention orientations, they should be motivated not only by positive models but also by negative models who illustrate the costs of poor health. Results indicated that both young and older adults perceived positive models to be motivating, but older adults found negative models to be more motivating than did young adults. Age differences in responses to negative models were partially mediated by differences in health-related prevention orientation.

*Keywords:* social comparison, self-regulation, role models, health, motivation

A variety of public service campaigns highlight examples of individuals experiencing either negative or positive outcomes in an effort to encourage people to change their behaviors. A recent antismoking campaign, for example, features testimonials from individuals who have suffered serious negative consequences as a result of smoking; one woman suffering from smoking-related chronic obstructive pulmonary disease noted in her testimonial, “They say life begins at 40—but mine just went into a downhill spiral. Cigarettes are awful things—they take over your mind and your life” (National Health Service, U.K., 2004). Such negative role models are expected to “frighten” other individuals into changing their behaviors so as to avoid experiencing a similarly undesirable outcome in the future. Other campaigns have used positive examples in an attempt to motivate individuals to embrace healthier lifestyles. For example, the Toronto Heart Health Partnership (THHP) has profiled examples of middle-aged women who are reaping the benefits of adopting better eating and exercise behaviors; as one woman commented, “Exercising regularly has made a big difference in my energy level. After only the first session I felt so great that I came home and did all the ironing!” (THHP, 2002). Such positive role models are expected to inspire other people to change their behaviors in order to achieve a

similarly desirable outcome. Thus, both negative and positive role models are assumed to exert a beneficial impact on the people exposed to them (Aspinwall, 1997; Lockwood, 2002; Lockwood & Kunda, 1997).

It is not clear, however, whether positive or negative role models will be most effective in activating intentions to change behaviors. To date, social comparison research has focused on the inspirational possibilities of comparisons to positive examples. Such upward comparisons can serve as a guide to self-improvement, providing an example of the accomplishments for which one can strive and a template of behaviors needed to achieve such success (Collins, 1996; Taylor & Lobel, 1989; Taylor, Wayment, & Carillo, 1996; Wood, 1989). In one study, for example, students who read about the outstanding accomplishments of a more senior student were inspired by the other’s achievements (Lockwood & Kunda, 1997, 1999); when participants viewed the other’s accomplishments as attainable, the successful other represented a possible future self (Markus & Nurius, 1986) and so motivated them to work toward a similarly positive outcome.

Although individuals may be inspired by examples of attainable success, it is less clear that they will be motivated by examples of individuals who have experienced a failure or misfortune (downward comparisons). Individuals tend to have positive illusions about their future prospects and expect to experience desirable rather than undesirable outcomes in a variety of domains (Taylor & Brown, 1988); as a result, they may typically expect to become more like positive than negative models in the future. In one set of studies, for example, students were motivated by examples of highly unsuccessful individuals only when they were forced to reflect on obvious parallels between themselves and the unfortunate others and so came to see themselves as vulnerable to experiencing similar problems in the future (Lockwood, 2002). Thus, in achievement domains, positive models may typically be perceived as more likely future selves than will negative models. Consequently, individuals may tend to find positive role models to be more motivating than negative role models.

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In some domains, however, the degree to which one views positive and negative models as relevant to the self may vary across age groups due to differences in regulatory orientations. In his analysis of self-regulation, Higgins (1997, 1998) has argued that individuals can be characterized by either promotion or prevention orientations. *Promotion orientation* involves a sensitivity to the presence or absence of positive outcomes and is characterized by a strategy of pursuing desirable end states. *Prevention orientation* involves a sensitivity to the presence or absence of negative outcomes and is characterized by a strategy of avoiding undesirable end states. These differences in regulatory focus, in turn, predict differences in the motivational impact of role models; individuals tend to be most motivated by role models that are congruent with their regulatory strategies (Lockwood, Jordan, & Kunda, 2002). In one set of studies, for example, promotion-focused individuals, who use a strategy of pursuing gains, were most inspired by examples of successful others; prevention-focused individuals, who use a strategy of avoiding losses, were most motivated by examples of unsuccessful others (Lockwood et al., 2002).

In the domain of health, young adults may be characterized by especially strong promotion relative to prevention orientations and so may be most motivated by positive role models. Young adults expect strong gains and few declines in their future development into middle age and report strong self-improvement goals on a variety of dimensions (Heckhausen, Dixon, & Baltes, 1989; Heckhausen & Krueger, 1993). Indeed, young adults report more gain-striving and fewer loss-avoiding goals than do older adults (Heckhausen, 1997). Young adults also report more personal projects aimed at acquiring positive outcomes and fewer personal projects aimed at avoiding the loss of positive outcomes than do older adults (Ogilvie, Rose, & Heppen, 2001). The literature on possible selves, individuals' hoped-for and feared future selves, also suggests that young adults may be especially focused on promotion. For example, the future selves of young adults tend to be more positive than those of older adults; when considering their middle-aged selves, young adults expect more desirable outcomes than their present selves are experiencing in domains such as autonomy, environmental mastery, and purpose in life (Ryff, 1991). This emphasis on self-improvement may be associated with especially strong promotion goals: Young individuals are likely to be considering gains that they want to pursue rather than losses that they hope to avoid. Consequently, young adults should be most inspired by models that represent the positive outcomes that they hope to achieve.

Consistent with this possibility, one recent study found that young adults were motivated to improve their eating and exercise behaviors after reading about a very healthy peer, a positive model, but were unaffected by the example of an unhealthy peer, a negative model (Lockwood, Wong, McShane, & Dolderman, 2005; Study 1). Moreover, this effect was mediated by participants' beliefs that they might become like the other in the future: Participants believed they could become like the healthy model and so were motivated to pursue a similar level of health; in contrast, because they believed they were unlikely to become like the unhealthy other, they saw no need to change their behaviors so as to avoid such an undesirable outcome. Thus, young adults are unlikely to be motivated by negative health role models; such

models are not consistent with their current strategy of pursuing gains.

In contrast, older adults may view negative health models to be more relevant. As individuals age, their focus on acquiring gains and averting losses appears to become more balanced. Older adults tend to expect more losses in their future development than do young adults (Heckhausen et al., 1989; Heckhausen & Krueger, 1993). They report more goals aimed at preventing losses (Heckhausen, 1997) and more personal projects aimed at avoiding the loss of their current positive circumstances (Ogilvie et al., 2001) than do younger adults. Older adults also report more negative future selves; they expect that the selves they will become in 10 to 15 years will be less positive than their current selves (Ryff, 1991), and they expect to experience a drop in their future subjective well-being relative to young adults (Staudinger, Bluck, & Herzberg, 2003). Older adults are especially likely to report feared selves in the domain of physical health (Cross & Markus, 1991); increasing awareness of vulnerability to health problems may lead to an especially pronounced focus on prevention in the domain of health. Thus, as individuals age, and the possibility of losses become more salient, they may experience stronger prevention orientations. Given older adults' concerns over their health-related vulnerabilities, prevention focus may become especially strong with respect to health; older adults may develop a greater sensitivity regarding the need to stave off threatening health outcomes.

It is important to note, however, that although older adults show an increased focus on avoiding negative outcomes relative to that of young adults, this concern with prevention does not appear to supersede promotion. Older adults are less gain focused and more loss focused than are young adults, but their gain-striving goals nevertheless continue to outnumber their loss-avoiding goals (Heckhausen, 1997). Thus, as individuals age, their orientations toward promoting positive and preventing negative outcomes likely become more balanced than those of younger adults. Whereas young adults may be driven largely by promotion concerns, older adults may be influenced by both promotion and prevention concerns. Consequently, we would expect older adults to be motivated by both positive and negative role models. In the domain of physical health, for example, both peers who are experiencing outstanding health and peers who are experiencing health problems may function as a representation of what older adults believe they might themselves become; they will be motivated to consider how they can approach the positive or avoid the undesirable outcomes.

To date, research has not examined the possibility that comparisons with health-related exemplars might have a different impact on motivation for young and older adults. Indeed, research on social comparison and health has not examined the effects of better-off and worse-off others on motivation. Although a large body of research has assessed how individuals make comparisons in health domains, this research has typically focused on the impact of comparisons on coping (for a review, see Tennen, McKee, & Affleck, 2000). For example, individuals often use the examples of worse-off others to self-enhance; they are reminded that they are at least coping better than some other individuals. In contrast, individuals can use the examples of better-off others as a source of inspiration; such examples of individuals who are coping well or who are recovering from their illness provide hope for the future (e.g., Wood, Taylor, & Lichtman, 1985). Individuals have

been found to use comparisons to cope with health problems such as cancer (Van der Zee, Oldersma, Buunk, & Bos, 1998; Wood & Van der Zee, 1997), rheumatoid arthritis (Blalock, Afifi, DeVellis, Holt, & DeVellis, 1990; DeVellis et al., 1991; Giorgino et al., 1994), and infertility (Stanton, 1992). However, because such studies have typically focused on individuals' beliefs about how comparisons affect their ability to cope, or on their perceptions of their physical symptoms, it remains unclear how health-related comparisons might influence individuals' motivation.

In addition, studies have not to date explored the possibility that such comparisons might have a different impact on the motivation of younger and older adults. A number of important studies have examined social comparison processes among older adults. Among seniors, both upward and downward comparisons related to physical health appear to be especially common (Heidrich & Ryff, 1993b; Rickabaugh & Tomlinson-Keasey, 1997). Moreover, older individuals typically make more downward than upward comparisons, viewing themselves as healthier and adjusting better to aging than are their same-age peers (Heidrich & Ryff, 1993b; Rickabaugh & Tomlinson-Keasey, 1997; Robinson-Whelen & Kiecolt-Glaser, 1997). These downward comparisons, in turn, appear to be associated with higher self-esteem (Rickabaugh & Tomlinson-Keasey, 1997) and more positive psychological well-being (Heidrich & Ryff, 1993a, 1993b). Thus, among older individuals, social comparison appears to play an important role in adjusting to the aging process. However, although this research provides important evidence regarding the nature of comparisons that older adults make, these studies have not examined the possibility that such downward comparison targets might also serve as negative role models, affecting individuals' health-related motivation. When individuals believe themselves to be vulnerable to the outcome experienced by a worse off other, they tend to be threatened rather than boosted; this threat, in turn, can motivate them to consider how they might avoid this undesirable outcome (Lockwood, 2002).

Because past studies typically have not directly compared the social comparison processes of young and older adults, it is difficult to determine the extent to which the impact of social comparisons may change across the life span. The few studies that have directly compared social comparison processes among young and older adults have assessed the relative preference for social and temporal comparisons (e.g., Brown & Middendorf, 1996; Suls, Marco, & Tobin, 1991) rather than the different functions that such comparisons may serve across age groups. Thus, it remains unclear whether upward and downward health-related comparisons have a different impact on young and older adults, and more specifically, the degree to which healthy and unhealthy peers can serve as role models at different life stages.

In the present research, we examined the motivating impact of positive and negative health-related role models on young and older adults and the degree to which motivation would be determined by health-related promotion and prevention. In Study 1, we examined the role models that young and older adults reported using in the past as a means of harnessing their motivation to make health-related changes. In Study 2, we compared the perceived motivating impact of positive and negative health models on young and older adults. In Study 3, we focused on older adults and assessed the degree to which they perceived a series of negative and positive role models specifically tailored to their age group to

be motivating. We predicted that, across studies, both young and older participants would find positive models to be motivating; in contrast, we expected that older adults would find negative models to be more motivating than would young adults. In addition, we expected that health-related prevention would predict motivation by negative models, but health-related promotion would predict motivation by positive models. Finally, we predicted that age differences in motivation by negative models would be due to differences in health-related prevention focus.

## Study 1: Health-Related Role Models Used by Young and Older Adults in Everyday Life

In Study 1, we examined the kinds of role models that young and older participants reported using in the past to motivate health-related behavior changes. If young adults have especially strong health-related promotion orientations, they should be likely to report examples of positive rather than negative role models who have helped them to harness their own motivation to change their health-related behaviors. In contrast, if older adults have more balanced health-related promotion and prevention orientations, they should report instances of both positive and negative models who have motivated them in the past.

### Method

**Participants.** Participants were 20 male and 52 female young adults (mean age = 20.82,  $SD = 2.03$ , range = 18 to 25 years) and 20 male and 48 female older adults (mean age = 65.69,  $SD = 4.14$ , range = 60–75 years). Young adults were introductory psychology students who received course credit for taking part in the study. Older adults were community-dwelling residents from the greater Toronto area who completed the questionnaire along with a package of unrelated measures; they were paid \$10 for their participation. Two participants were excluded from the analyses because they indicated that they had never used a health role model. Two additional participants were excluded from the analyses because they provided both positive and negative examples. Finally, 1 participant was excluded because she indicated that she was motivated by TV and newspapers rather than by a specific individual. Altogether, 70 young adults and 65 older adults were included in the analyses.

**Procedure.** Participants first read the following instructions:

Take a moment to think about someone who has motivated you, at some point in your life, to change a health-related behavior. For example, someone with excellent health may have motivated you to improve your health because you wanted to try to become more like them in the future. Alternatively, someone with a health problem may have motivated you to improve your health because you wanted to avoid becoming like them in the future. This person should be someone who motivated you because of the example that they set: They might have set a "good" example if their behavior was very healthy, and you wanted to become more like them. Or, they might have set a "bad" example if their behavior was very unhealthy, and you wanted to avoid becoming like them. This person may be someone you actually know, or someone you have never met.

Instructions were counterbalanced so that half of the participants read the definition of the positive model first, and half read the definition of the negative model first; the order of definitions had no impact on the results. Participants were then asked to describe their role model in open-ended form. On the following page, they indicated whether the model they had described was female or male, whether they knew the model, the model's age at the time that they were motivated by the model, and their relation-

ship to the model. In addition, they were asked to describe, in open-ended form, the behavior(s) that this person motivated them to change.

## Results and Discussion

**Role model choice.** We first examined the nature of participants' chosen role models.<sup>1</sup> Participants who described positive models generally provided rich information about an individual in their lives who had set an example that they sought to emulate:

This person is my brother; he is [a] very healthy person who exercises on a regular basis and who eats a nutritious, well-balanced diet. In second year university I started developing poor health habits, such as eating too much junk food, and not exercising regularly; the result was a destruction of routine and most of all I noticed my sleep habits started to get worse (trouble falling asleep). I envied my brother's ability to sleep deeply and soundly on a regular basis, to focus on his studies, to maintain routine—all of which I think had to do with exercise and healthy eating. I was motivated to become more like him, so I made an exercise routine and stuck to a more disciplined pattern of eating healthily. I wanted to be a disciplined, well-rested, focused, energetic person like my brother. I saw the changes as *essential* to my success as a student. (Female participant, age 22)

She was and is an excellent mother and a grandmother—very active; always doing things and never one to be a couch-potato. I am talking about my friend who has given so much of her time to not only work during her working life plus take care [*sic*] of her family but later in life she volunteered in a seniors home and twice a week, she helps out at the coffee shop or at the bazaar helping to raise money for the home. Plus she is into line dancing! I, too, have been impressed with her work and taking healthy tips from her—be active, stay active, and be of service to others. This way one can be healthy both mentally and physically. (Female participant, age 63)

Participants who described negative models provided detailed examples of individuals who had suffered from health problems, motivating them to avoid similar outcomes:

This person would drink excessively, every day of the week. He would party often and neglect important things like school and work. He did not play any sports or work out and he had no interest in physical activity. He could only socialize when drunk or drinking and was not very sociable at other times. I realized that I did *not* want to be like this person and it motivated me to start living a more healthy, structured lifestyle. Also, it made me realize that partying *excessively* is neither fun or [*sic*] glamorous. (Female participant, age 21, describing a friend)

I have been motivated to walk more and join an exercise program because of watching the gradual decline in my mother's activity in her later years. She learned she had osteoporosis when she was in her 60s but was disinclined to regular exercise and she has gradually become more crippled and eventually in a wheelchair and unable to walk. I knew this was possibly a hereditary problem and so in my late 40s I began to consciously walk regularly, take stairs instead of elevator [*sic*], take up Yoga and line dancing. This has helped my physical health, and I also now enjoy activities and meet more people than I would have otherwise. (Female participant, age 70)

A chi-square analysis revealed that participants' age group influenced their choice of role model,  $\chi^2(1, N = 135) = 4.46, p = .035$ . Whereas 50.77% of older participants selected a negative role model, only 32.86% of younger participants did so. Thus,

whereas young adults appear to use positive models primarily, older adults appear to use both positive and negative models.

Participants tended to select role models of the same gender as themselves; whereas 66.67% of female participants described a female role model, 78.38% of male participants described a male role model,  $\chi^2(1, N = 135) = 21.61, p < .001$ . Male (58.97% positive, 41.03% negative) and female (58.33% positive, 41.67% negative) participants did not differ in their likelihood of describing a positive or negative model,  $\chi^2(1, N = 135) = .005, p = .95$ . Participants overwhelmingly selected role models whom they knew personally (91.11%).

We also examined whether the age of role models described differed as a function of participants' age and the type of model (positive or negative). Neither the age category by model type interaction nor the main effect of model type was significant (both  $F_s < 1.00$ ). However, the main effect of age category was significant,  $F(1, 119) = 9.48, p = .003$ . The age of the role models described by older adults ( $M = 46.21$ ) was significantly higher than the age of the role models described by younger adults ( $M = 36.11$ ).

**Relationship to role model.** We also examined the nature of participants' relationship to the role models they described. As can be seen in Table 1, participants were most likely to list friends, parents, and other relatives as health-related role models. Among participants who listed friends ( $n = 35$ ), both younger and older adults were especially likely to list friends as positive rather than negative role models,  $\chi^2(1) = 6.43, p = .01$ . Among participants who described their mother or father ( $n = 31$ ), young adults tended to list a parent as a positive model, but older adults tended to list a parent as a negative model; however, this age by model type difference did not reach significance,  $\chi^2(1) = 2.58, p = .11$ .

**Health domain of behavior change.** In addition, we examined the specific health domains in which role models motivated participants to change their behaviors (see Table 2). Most behaviors fell into one of the following seven domains: diet (e.g., eating fewer baked goods, eating a more nutritious diet), exercise (e.g., joining a gym, walking more often), psychological outlook (e.g., having a more positive outlook on life, reducing stress), smoking (e.g., cutting back on smoking, refusing to start smoking), alcohol (e.g., drinking less, drinking less often), sleep (e.g., going to bed earlier, getting more sleep), and substance abuse (i.e., use of drugs other than alcohol). Behaviors that did not fall into these categories (e.g., brushing teeth more often, having better posture) were coded as "other." Participants often listed more than one behavior (e.g., "I plan to exercise more and eat a more nutritious diet"); frequencies and percentages listed in Table 2 reflect the total number of participants who mentioned each behavior and thus total more than 100%.

Both young and older participants were overwhelmingly likely to list behavior changes in the domains of diet (51.11%) and exercise (48.89%). Of the 135 listings of behavior changes in these

<sup>1</sup> All models in these analyses clearly fell into the positive or negative categories. Participants ( $n = 5$ ) who described models that did not fall unambiguously into one of the two categories were excluded from the analyses, as noted in the *Participants* section for Study 1. Category assignment was confirmed by an independent coder who was unaware of the study hypotheses.

Table 1  
*Number of Role Models Described in Each Relationship Category as a Function of Age Category of Participant and Type of Role Model (Study 1)*

Relationship	Young adults ( <i>n</i> = 70)		Older adults ( <i>n</i> = 65)		Total
	Positive model	Negative model	Positive model	Negative model	
Parent	9 (12.86)	5 (7.14)	6 (9.23)	11 (16.92)	31 (22.96)
Other relative	10 (14.29)	9 (12.86)	2 (3.08)	6 (9.23)	27 (20.00)
Friend	13 (18.57)	6 (8.57)	12 (18.46)	4 (6.15)	35 (25.93)
Significant other	4 (5.71)	0 (0.0)	4 (6.15)	5 (7.69)	13 (9.63)
Co-worker	0 (0.0)	0 (0.0)	2 (3.08)	3 (4.62)	5 (3.70)
Other	11 (15.71)	3 (4.29)	6 (9.23)	4 (6.15)	24 (17.78)
Total	47 (67.14)	23 (32.86)	32 (49.23)	33 (50.77)	135 (100.0)

*Note.* Numbers in parentheses for Young adult and Older adult columns represent percentages within each age group; numbers in parentheses in Total column represent percentages for overall sample.

domains, 96 (71.11%) were listed by participants who had described a positive model, and only 39 (28.89%) were listed by participants who had described a negative model. Thus, changes to eating and exercise behavior appear to be prompted more often by positive than negative health role models. In contrast, in the domains of drinking, smoking, and unspecified substance abuse, participants were more likely to have described negative models (e.g., someone suffering the consequences of smoking) than positive models (e.g., someone enjoying the health benefits of quitting); of the 40 listings of behaviors in these areas, 32 (80.0%) were associated with a negative health model.

Study 1 provides an interesting analysis of the kinds of role models that individuals use to harness their health-related motivation in daily life. Overwhelmingly, participants reported being motivated by people with whom they had close contact, either currently or in the past: Parents and other family members, friends, and to some extent significant others provided examples of the kinds of health outcomes that participants sought to approach or to avoid. In the domains of diet and physical activity, participants were most likely to be motivated by positive examples; in the domains of smoking, and alcohol or other substance abuse, participants were most likely to be motivated by negative examples. Thus, the motivational effectiveness of positive and negative role

models may vary across behavior types: When individuals are trying to stop engaging in a detrimental behavior, such as drinking or smoking, a negative model may be most effective; when they are trying to start engaging in a beneficial behavior, such as exercise or healthy eating, a positive model may be most effective (see also Lockwood, Sadler, Fyman, & Tuck, 2004). Of course, eating habit changes may involve both starting new positive habits, such as eating more vegetables, and stopping negative habits, such as cutting back on fats. It may be that, within the domain of dietary behavior, participants will be most motivated by positive examples when they are seeking to eat more healthy foods and by negative examples when they are trying to cut back on unhealthy foods. In the current data, such a fine-grained analysis is not possible; participants often listed more than one behavior and in some cases described a general behavior change (e.g., "change my diet") without specifying whether they intended to start or stop a particular activity to make this change. Nevertheless, in future research, it may be interesting to examine in greater detail the relationship between types of role models and behavior changes.

Overall, Study 1 is consistent with our hypothesis that whereas older adults will be motivated by both healthy and unhealthy exemplars, young adults will be most motivated by healthy exemplars. When considering examples of individuals who had moti-

Table 2  
*Number of Participants Listing Behaviors in Each Health Domain as a Function of Age Category of Participant and Type of Role Model (Study 1)*

Health domain	Young adults ( <i>n</i> = 70)		Older adults ( <i>n</i> = 65)		Total
	Positive model	Negative model	Positive model	Negative model	
Diet	32 (45.71)	10 (14.29)	17 (26.15)	10 (15.38)	69 (51.11)
Exercise	30 (42.86)	12 (17.14)	17 (26.15)	7 (10.77)	66 (48.89)
Psychological outlook	6 (8.57)	5 (7.14)	16 (24.62)	8 (12.31)	35 (25.93)
Smoking	4 (5.71)	9 (12.86)	0 (0.0)	9 (13.85)	22 (16.30)
Alcohol	0 (0.0)	4 (5.71)	3 (4.62)	7 (10.77)	14 (10.37)
Sleep	6 (8.57)	1 (1.43)	0 (0.0)	0 (0.0)	7 (5.19)
Substance abuse	1 (1.43)	3 (4.29)	0 (0.0)	0 (0.0)	4 (2.96)
Other	7 (10.0)	1 (1.43)	2 (3.08)	5 (7.69)	15 (11.11)

*Note.* Numbers in parentheses for Young adult and Older adult columns represent percentages within each age group; numbers in parentheses in Total column represent percentages for overall sample.

vated them in the past, older adults were about equally likely to describe positive and negative models, but young adults were more likely to describe positive rather than negative models. However, although this study provides useful insights into the kinds of role models that individuals have used in the past, we cannot use these results to draw firm conclusions regarding age differences in motivation by role models. Participants provided a single retrospective report regarding motivation by a role model; these reports may not accurately reflect actual preferences for role models. For example, it may be that young adults have used both positive and negative role models but simply found it easier to recall a positive example. Moreover, participants in Study 1 provided examples of role models who had motivated them at some point in the past; thus, it is not clear when this motivation actually occurred. It is interesting that older participants tended to describe role models who were middle-aged, suggesting that this motivation may have taken place at an earlier point in their lives. It is not clear that older adults' current use of role models as motivators would follow the same pattern. We addressed these issues in a second study, in which we examined more directly differences in current motivation by positive and negative role models among young and older adults.

### Study 2: The Perceived Motivating Impact of Positive and Negative Role Models Among Young and Older Adults

In Study 2, rather than relying on retrospective reports, we provided participants with specific examples of fit and out-of-shape role models. We chose models representing general fitness levels because the results of Study 1 suggested that both young and older adults have used models in this domain. It is possible that some models, such as those illustrating desirable or undesirable body shapes, are especially relevant to young adults, and that others, such as those illustrating desirable or undesirable cardiovascular health, are especially relevant to older adults. By focusing on general fitness rather than more specific health issues, we sought to create models that should be relevant to both age groups. We asked young and older adults to indicate whether they would perceive each of these positive and negative role models to be effective in motivating health-related behavior changes. We predicted that both young and older adults would perceive positive models to be motivating, but that older adults would perceive negative models to be more motivating than would young adults.

We also used Study 2 to examine more directly the role of regulatory focus in determining age differences in responses to positive and negative role models. Participants completed measures assessing both their general and their health-related regulatory orientations. We expected that whereas young adults would have especially strong promotion orientations, older adults would have more balanced promotion and prevention orientations. We also predicted that, in the domain of health, older adults would have higher prevention orientations than would young adults. Prevention focus should be boosted to the greatest degree in those domains in which older adults are most concerned about experiencing a possible decline; thus, we expected that their health-related prevention orientation, in particular, would be stronger than that of young adults. Moreover, we predicted that differences in health-related prevention would mediate age differences between young and older adults' responses to negative models; that is, older

adults would be more motivated by negative models because of their higher focus on health-related prevention. We expected no age differences in health-related promotion orientation. Finally, we expected that, overall, a stronger focus on health-related prevention would be associated with greater motivation by negative models, whereas a stronger focus on health-related promotion would be associated with greater motivation by positive models.

### Method

**Participants.** Participants were 28 female and 33 male young adults (mean age = 19.68,  $SD = 1.42$ ; range = 18–25) and 22 female and 23 male older adults (mean age = 67.67,  $SD = 3.91$ ; range = 60–74). Young adults were recruited from an introductory psychology course and received course credit for their participation. Older adults were community-dwelling residents from the greater Toronto area and were paid \$10 for their participation. One female older participant's data were deleted from the analyses because her first language was not English, and she had difficulty understanding the study materials; another female older participant's data were deleted from the analyses because she received incorrect instructions for the study. Thus, 20 female and 23 male older adults were included in the analyses.

Education levels differed significantly across the age categories,  $F(2, 141) = 13.69, p < .001$ ; older adults reported having more years of education ( $M = 14.42, SD = 1.15$ ) than did the younger adults ( $M = 12.59, SD = 3.10$ ). Among the older adults, 25 were married, 6 were divorced, 6 were widowed, 5 were never married, and 1 listed marital status as "other." All of the young participants listed their status as "never married." Gender did not interact with any of the other variables and therefore is not discussed further.<sup>2</sup>

**Procedure.** Participants were invited to take part in a study on health-related activities. They first rated themselves on a general regulatory focus measure (Lockwood et al., 2002); this scale includes nine items measuring general promotion (e.g., "I frequently think about how I will achieve success," "In general, I am focused on achieving positive outcomes in my life") and nine items measuring general prevention (e.g., "I frequently think about how I can prevent failures in my life," "I am more oriented toward preventing losses than I am toward achieving gains"). The word "academic" was removed from two items in the original scale (e.g., "I frequently think about how I will achieve academic success") to ensure that the scale would be relevant to both young and older adults. Next, participants completed a measure of health-related regulatory focus. Five items measured promotion (e.g., "I frequently think about my ideal level of health," "I frequently think about how I can improve my health," "My major health-related goal right now is to improve my level of fitness") and five items measured prevention ("I frequently think about the health problems I may have in the future," "My most important health-related goal right now is to avoid experiencing major health problems," "I often think about negative health experiences that I may have down the road"). For both the general and health-related regulatory focus measures, ratings were made on a 9-point scale with endpoints labeled 1 (*not at all true of me*) and 9 (*very true of me*).

Participants then rated the extent to which they would be motivated by six positive role models (e.g., "a person my age who is trim and fit," "a very athletic person my age," "a person my age in excellent physical condition") and six negative role models (e.g., "a person my age in poor physical condition," "a very unathletic person my age," "a person my age who is overweight"). Participants indicated whether or not they would be

<sup>2</sup> A 2 (age group)  $\times$  2 (role model type)  $\times$  2 (gender) repeated measures analysis revealed a main effect of gender. Female participants ( $M = 5.73$ ) reported being more motivated by role models, both positive and negative, than did male participants ( $M = 4.58$ ),  $F(1, 100) = 8.44, p = .005$ .

motivated to improve their health-related behaviors by each example using a 9-point scale with endpoints labeled 1 (*not at all true*) and 9 (*very true*).

Finally, participants were asked to rate their own physical health relative to others their own age; ratings were made on a 5-point scale with labels ranging from 1 (*very poor*) to 3 (*fair*) to 5 (*excellent*).<sup>3</sup>

## Results and Discussion

**General regulatory focus.** Both the promotion (Cronbach's  $\alpha = .88$ ) and prevention (Cronbach's  $\alpha = .83$ ) subscales were reliable. To examine whether the relative strength of promotion and prevention goals would differ across age groups, we conducted a  $2 \times 2$  mixed factorial analysis of variance (ANOVA) with age category (young or older) as the between-subjects variable, and regulatory focus type (promotion or prevention) as the within-subjects variable. In line with previous research on regulatory focus in North American samples (e.g., Elliot, Chirkov, Kim, & Sheldon, 2001; Lee, Aaker, & Gardner, 2000), we expected that general promotion orientation would be stronger than general prevention orientation. Consistent with this past research, the main effect of regulatory focus type was significant,  $F(1, 102) = 95.70, p < .001$ . As may be seen in Figure 1, promotion focus was stronger than prevention focus across age groups. The main effect of age group was also significant,  $F(1, 102) = 29.79, p < .001$ . Young adults reported stronger regulatory goals, both promotion and prevention, than did older adults. Finally, the age category by regulatory focus type interaction was marginally significant,  $F(1, 102) = 3.38, p = .07$ . This marginal interaction reflected the greater contrast between promotion and prevention focus that existed among young adults in comparison to the older adults; although both age groups were more promotion than prevention oriented, this discrepancy was strongest among the young adults.

**Health-related regulatory focus.** Both the health-related promotion (Cronbach's  $\alpha = .81$ ) and health-related prevention (Cron-

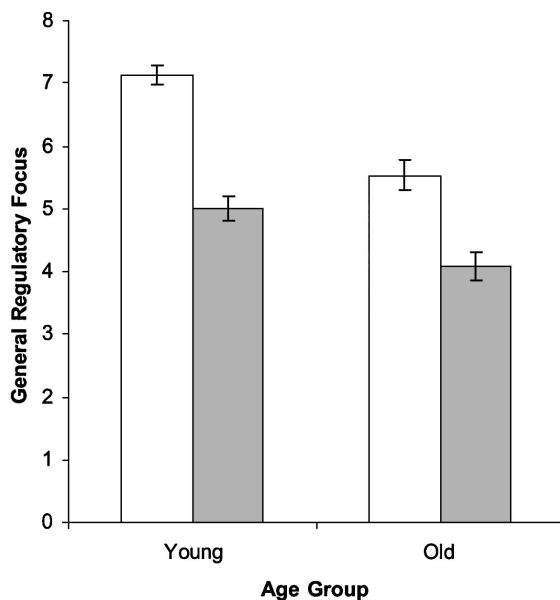


Figure 1. General promotion and prevention orientations of young and older adults (Study 2). White bars = general promotion; shaded bars = general prevention.

bach's  $\alpha = .84$ ) subscales were reliable. To examine whether the relative strength of health-related promotion and prevention goals would differ across age groups, we conducted a  $2 \times 2$  mixed factorial ANOVA with age category (young or older) as the between-subjects variable, and health-related regulatory focus type (promotion or prevention) as the within-subjects variable. The interaction was significant,  $F(1, 102) = 9.73, p = .002$ . As may be seen in Figure 2, health-related prevention was weaker among young than among older participants,  $F(1, 102) = 5.62, p = .02$ . In contrast, the difference in health-related promotion did not reach significance across the young and older groups,  $F(1, 102) = 2.08, p = .15$ . Simple effects for the within-subjects variable revealed that health-related promotion was stronger than health-related prevention for both younger adults,  $F(1, 60) = 85.69, p < .001$ , and older adults,  $F(1, 42) = 9.27, p = .004$ . As suggested by the interaction, this difference in health-related promotion and prevention focus among older adults ( $\eta^2 = .18$ ) was smaller than that among younger adults ( $\eta^2 = .59$ ).

As was the case with general regulatory focus, the main effect of focus type was significant; promotion orientation was generally stronger than prevention orientation,  $F(1, 102) = 66.06, p < .001$ . The main effect of age was not significant ( $F < 1.00$ ).

**Motivation by positive and negative role models.** Motivation by positive models (Cronbach's  $\alpha = .90$ ) and motivation by negative models (Cronbach's  $\alpha = .94$ ) were each averaged into a single index. Motivation by positive models was positively correlated with motivation by negative models,  $r = .81, p < .001$ . To test whether age category and type of role model would influence perceived motivation by role models, we conducted a  $2 \times 2$  mixed factorial ANOVA, with age category (young or older) as the between-subjects variable and role model type (positive or negative) as the within-subjects variable. The interaction was significant,  $F(1, 102) = 21.29, p < .001$  (see Figure 3). As expected, older adults were more motivated by negative models than were young adults,  $F(1, 102) = 3.87, p = .05$ . In contrast, the older participants' ratings of the perceived motivating impact of positive models did not differ from those of young adults ( $F < 1.00$ ). Thus, positive models were motivating for both young and older adults. Whereas younger adults found positive models to be more motivating than negative models,  $F(1, 60) = 27.85, p < .001$ , older adults' ratings of the motivating effects of positive and negative models did not differ,  $F(1, 42) = 1.91, p = .18$ .

**Ratings of physical health.** Participants' ratings of their health relative to that of their peers differed significantly across age categories,  $F(1, 102) = 6.69, p = .01$ . Young adults rated their health less positively ( $M = 3.65, SD = 0.69$ ) than did older adults ( $M = 3.98, SD = 0.56$ ). Across groups, health ratings were not correlated with either motivation by positive models ( $r = -.06, p = .54$ ) or motivation by negative models ( $r = -.01, p = .89$ ). The Age Category  $\times$  Role Model Type interaction remained

<sup>3</sup> Study 2 also included a measure in which participants read a more detailed description of either a specific positive or negative role model and then rated their motivation by this model; however, because of an error in the experimental procedure, instructions to participants were inconsistent across age groups, making the resultant data uninterpretable. Reading about a specific positive or negative model had no impact on the other variables and is therefore not discussed further.

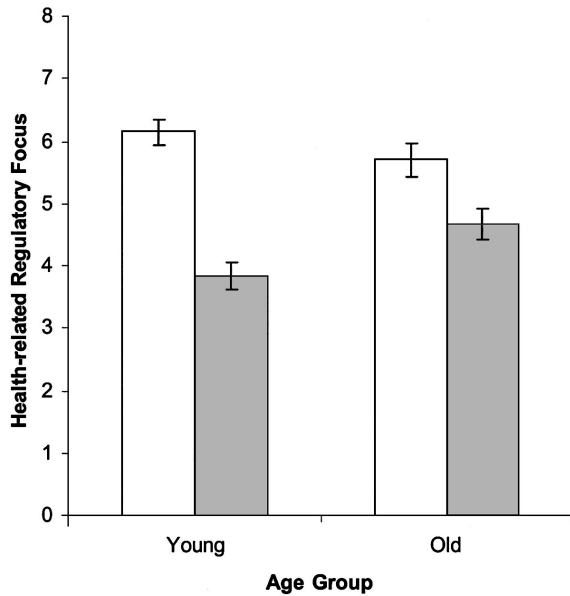


Figure 2. Health-related promotion and health prevention orientations of young and older adults (Study 2). White bars = health promotion; shaded bars = health prevention.

significant even after we controlled for health ratings,  $F(1, 101) = 20.66, p < .001$ . Thus, it seems unlikely that the older adults were more motivated by the negative models than were the young adults simply because they were having more health problems relative to others their own age; they actually perceived themselves to be in better health relative to their peers than did the young adults.

**Regression analyses.** Across age groups, we predicted that health-related promotion would be associated with motivation by positive models, and health-related prevention would be associated with motivation by negative models. We conducted two regression analyses to test this possibility. We first regressed motivation by positive models on health-related promotion, health-related prevention, and motivation by negative models simultaneously ( $R^2 = .70, p < .001$ ); we included the latter variable as a predictor to control for general motivation by role models. As expected, promotion was positively associated with motivation by positive models ( $\beta = .23, p < .001$ ), but prevention was not ( $\beta = -.09, p = .11$ ). Motivation by negative models was also a significant predictor in this analysis ( $\beta = .74, p < .001$ ). We then regressed motivation by negative models on health-related promotion, health-related prevention, and motivation by positive models simultaneously ( $R^2 = .67, p < .001$ ). As predicted, prevention was positively associated with motivation by negative models ( $\beta = .14, p = .02$ ), but promotion was not ( $\beta = -.04, p = .51$ ). Motivation by positive models was also a strong predictor of motivation by negative models ( $\beta = .81, p < .001$ ).

In addition, we had predicted that older adults would be more motivated by negative role models than would young adults because of their stronger focus on health-related prevention. Accordingly, we examined whether health-related prevention would mediate the impact of age on motivation by negative models for these two groups (Baron & Kenny, 1986). First, we regressed motivation by negative role models on age group and obtained a significant

effect ( $\beta = .19, p = .05$ ). Next, we regressed the mediator, health-related prevention, on age group, and obtained a significant effect ( $\beta = .23, p = .02$ ). Finally, we regressed motivation by negative role models on age group and health-related prevention simultaneously. Health-related prevention had a significant effect on motivation ( $\beta = .20, p = .04$ ). The effect of age group on motivation was no longer significant ( $\beta = .14, p = .14$ ). A Sobel (1982) test revealed that the mediated effect of age group on motivation by negative models was marginally significant ( $Z = 1.62, p = .10$ ). Thus, the older individuals appeared to be motivated by the negative models to a greater degree than the younger individuals at least in part because of their higher focus on preventing negative health outcomes.

Overall, the results of Study 2 suggest that the motivating impact of positive and negative health role models may vary across the life span. Consistent with the results of Study 1, we found that young adults in Study 2 reported being motivated more by positive than negative role models. In contrast, the older participants reported being motivated by both forms of model.

We note that the older participants in Study 2 tended to report weaker general regulatory orientations, both promotion and prevention, than did young participants. As individuals age, they perceive greater stability in their development than do younger adults; although individuals across age groups expect to experience more losses than gains in old age, older individuals expect smaller increases in undesirable and smaller decreases in desirable attributes in old age than do younger adults (Heckhausen & Krueger, 1993). Older adults also report having fewer hoped-for and feared selves than do younger adults (Cross & Markus, 1991), suggesting that they are expecting to change less than are younger adults. To the extent that older adults are expecting their outcomes to be relatively stable for the near future, they may see less need to pursue gains or avoid losses, leading to a weaker orientation

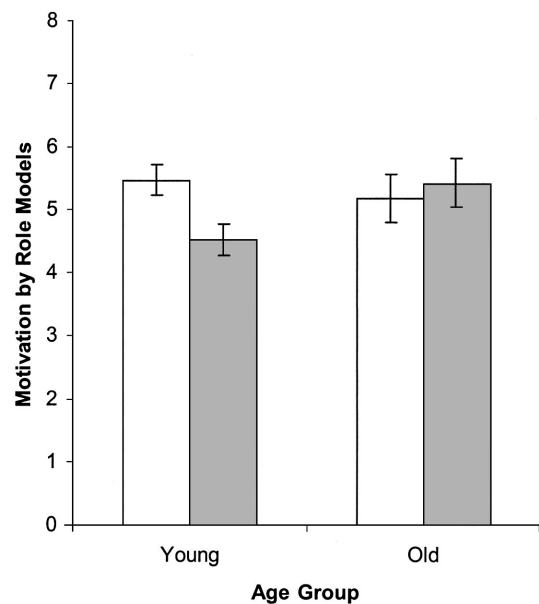


Figure 3. Motivation by positive and negative role models among young and older adults (Study 2). White bars = positive role models; shaded bars = negative role models.



toward both promotion and prevention. However, although older adults report fewer possible selves overall than do young adults, they report more feared selves in the domain of physical health (Cross & Markus, 1991). Thus, whereas older adults' general regulatory focus may be attenuated, their more specific focus on health-related prevention appears to be enhanced. This emphasis on health-related prevention is associated with greater motivation by examples of unhealthy individuals.

### Study 3: Older Adults' Perceptions of the Motivating Impact of Negative and Positive Health-Related Models

In Study 2, we used examples of role models that we expected would be relevant for both young and older adults: negative models who were out of shape and positive models who were fit and healthy. Such a design has methodological advantages in that it permits direct comparisons across age groups. However, the use of identical examples for young and older adults may pose problems of ecological validity because, across the adult life span, the nature of the health-related role models that individuals use may change. Specifically, older individuals likely make more social comparisons to peers who are experiencing extreme outcomes, such as heart attacks, strokes, and loss of personal autonomy due to poor health. Such examples may be irrelevant to young adults, who likely do not have peers experiencing such outcomes, but may be highly relevant to older adults. It therefore is important to examine how older adults will be affected by the kinds of models that may actually be most salient to them—those dealing with serious health issues. It is possible that such extreme examples may not be motivating and may simply threaten these older individuals by making them aware of their own mortality. It is one thing to consider an out-of-shape feared self and quite another to consider a feared self who has suffered a stroke. If more extreme examples of negative models leave older adults feeling fearful and helpless, such models may be demoralizing rather than motivating. If this were the case, it would be erroneous to conclude that older adults are motivated by negative role models. However, given that older participants frequently cited examples of quite serious negative role models in Study 1, we expected that even models with more severe health problems would be motivating for older adults. In Study 3, we examined this possibility more directly. Rather than comparing young and older adults, we focused on older participants and attempted to confirm that positive and negative models that better reflected the kinds of health outcomes that are relevant for this group would indeed be perceived as motivating. Although we were primarily concerned with the impact of more ecologically valid negative models, we also attempted to provide positive models that might be more relevant to the issues faced by older adults. For example, older adults may be more influenced by a positive model who has improved his or her cholesterol levels than by a positive model who is simply described as being in excellent shape.

In addition, we used Study 3 to rule out the possibility that the relationship between regulatory focus and motivation by role models could be due to a third variable, such as self-esteem, perceived health status, general life satisfaction, or perceived control over health. For example, one might argue that individuals who report greater concern with preventing undesirable outcomes also tend to have less positive perceptions of themselves, their health, and their

lives in general and so view a negative model as more similar and relevant to themselves. Similarly, those who report greater concern with promoting desirable outcomes may perceive positive models to be more motivating simply because they have more positive perceptions of themselves, their health, or their lives in general and so view a positive model to be more similar and relevant to them. We also examined the relationship between perceived control over health outcomes and motivation by positive and negative models. We expected that perceived control might be positively associated with motivation by role models: Individuals are most likely to be motivated to change their behavior when they believe that they have the ability to make such changes. Nevertheless, we expected that regulatory focus would predict motivation by role models over and above perceived control. In sum, we expected that regulatory focus would determine motivation by role models even after controlling for the effects of self-esteem, perceptions of current health, life satisfaction, and perceived control over health.

### Method

**Participants.** Participants were 30 women and 15 men between the ages of 61 and 75 (mean age = 70.40,  $SD = 5.79$ ). Participants were community-dwelling residents from the greater Toronto area and were paid \$10 for taking part in the study. Participants reported mean education levels of 13.78 years ( $SD = 3.16$ ). Twenty participants were married, 8 were widowed, 11 were divorced, 2 were never married, and 4 listed their marital status as "other."

**Procedure.** Participants were invited to take part in a study on health-related issues. Participants first rated the extent to which they would be motivated by a series of seven negative and seven positive health-related role models. Negative models were examples of individuals experiencing undesirable health outcomes (e.g., "a person my age who has had a stress-induced heart attack," "a person my age who has difficulty getting around because of his or her poor physical condition," "a person my age who has had a stroke recently"); positive models were examples of individuals experiencing desirable health outcomes (e.g., "a person my age who has improved his or her cholesterol levels," "a person my age who is very trim and physically fit," "a person my age in a fitness group who has reduced his or her high blood pressure"). Participants indicated whether or not these models would motivate them to improve their own health-related behaviors on a 7-point scale with endpoints ranging from 1 (*not at all true*) to 7 (*very true*).

Next, participants completed the same measure of health-related regulatory focus used in Study 2 (promotion  $\alpha = .81$ ; prevention  $\alpha = .89$ ). Ratings were made on a 7-point scale with endpoints labeled 1 (*not at all true of me*) and 7 (*very true of me*).

Participants then completed the Rosenberg Self-Esteem Scale (Rosenberg, 1965; Cronbach's  $\alpha = .83$ ), and the five-item Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985; Cronbach's  $\alpha = .85$ ). Participants also completed the Internal Health Locus of Control (IHLC), the Chance Health Locus of Control (CHLC), and the Powerful Others Locus of Control (PHLC) subscales of the Multidimensional Health Locus of Control Scale (Form A; Wallston, Wallston, & DeVellis, 1978). The six IHLC items tap individuals' beliefs that they personally control their health (e.g., "I am in control of my health";  $\alpha = .71$ ); the six CHLC items tap individuals' beliefs that their health is controlled by chance factors (e.g., "My good health is largely a matter of good fortune";  $\alpha = .60$ ); the six PHLC items tap individuals' beliefs that others such as health professionals control their health (e.g., "Having regular contact with my physician is the best way for me to avoid illness";  $\alpha = .80$ ). For each of these measures, participants rated themselves on each item using a 7-point scale with endpoints labeled 1 (*strongly disagree*) and 7 (*strongly agree*). Finally, participants rated their physical health relative to that of their peers.

Ratings were made on a 5-point scale with labels ranging from 1 (*very poor*) to 3 (*fair*) to 5 (*excellent*).

**Results and Discussion**

*Positive and negative role models.* Negative role model items (Cronbach’s  $\alpha = .91$ ) and positive role model items (Cronbach’s  $\alpha = .91$ ) were each averaged into a single index. A repeated measures ANOVA revealed that participants perceived the negative role models ( $M = 5.22, SD = 1.49$ ) to be more motivating than the positive role models ( $M = 4.84, SD = 1.52$ ),  $F(1, 44) = 7.21, p < .001$ . Thus, participants reported that they would be more motivated to change their own behaviors after encountering unhealthy rather than healthy peers.

*Self-esteem, satisfaction with life, health ratings, and perceived control over health.* We also used Study 3 to rule out a set of third-variable explanations for the relationship between regulatory focus and motivation by role models. Means and standard deviations, as well as intercorrelations between these variables, are presented in Tables 3 and 4, respectively.<sup>4</sup> As can be seen in Table 4, health-related regulatory focus was associated with variables such as self-esteem, perceptions of current health, and perceived control over health. We did not, however, find strong relationships between these variables and motivation by role models. IHLC was marginally positively correlated with motivation by positive models, but CHLC, PHLC, self-esteem, life satisfaction, and health ratings were not correlated with motivation by either positive or negative role models.

*Relationships with health-related regulatory focus.* We had hypothesized that health-related regulatory orientation would predict motivation by role models over and above any effects of self-esteem, life satisfaction, perceived health control, and perceived health status. To test this possibility more directly, we conducted two separate regression analyses. First, we regressed motivation by positive models on promotion orientation; prevention orientation; self-esteem; satisfaction with life; health ratings; and the IHLC, CHLC, and PHLC subscales simultaneously; we also included motivation by negative models as a predictor to control for shared variance in general motivation by role models (overall  $R^2 = .73, p < .001$ ). Health-related promotion predicted motivation by positive role models ( $\beta = .26, p = .056$ ), but health-related prevention did not ( $\beta = -.10, p = .44$ ). Motivation by negative models was also a significant predictor of motivation by positive models ( $\beta = .68, p < .001$ ), indicating that participants

who are motivated by one form of model also tend to be motivated by the other. None of the other predictors were significant.

Next, we regressed motivation by negative models on promotion orientation; prevention orientation; self-esteem; satisfaction with life; health ratings; the IHLC, CHLC, and PHLC subscales; and motivation by positive models simultaneously ( $R^2 = .72, p < .001$ ). Health-related prevention predicted motivation by negative models ( $\beta = .28, p = .03$ ); health-related promotion did not ( $\beta = -.05, p = .75$ ). Motivation by positive models also predicted motivation by negative models in this analysis ( $\beta = .71, p < .001$ ). None of the other variables were significant predictors in this analysis. Study 3 thus replicated the pattern of findings in Study 2: We found the expected relationships between promotion and motivation by positive models and between prevention and motivation by negative models. This pattern of relationships was evident even after we controlled for participants’ self-esteem, life satisfaction, perceived health, and perceived control over health.

In sum, older participants believed they would be more motivated to improve their health-related behaviors by individuals experiencing negative outcomes than by individuals experiencing positive outcomes. Because they were aware that they might themselves experience such health concerns in the future and, consequently, would be motivated to prevent health declines, these individuals found examples of individuals with serious health problems to be especially compelling. We note, however, that the severity of illness associated with the negative examples makes it difficult to interpret our finding that the negative models were more motivating than the positive models. The negative models in this study may simply have been perceived to be more extreme, and therefore more influential, than the positive models. For example, an individual who has had a heart attack is experiencing a more extreme health outcome than is an individual who has reduced his or her cholesterol levels. Although the difference in extremity is methodologically problematic, the negative models used in Study 3 may more accurately represent the kinds of positive and negative outcomes envisioned by older adults and may thus be more ecologically valid than those used in Study 2. The fact that participants perceived the negative models to be highly motivating suggests that such models can, in fact, have an impact and are not simply dismissed as irrelevant to the self, ignored because of their threatening implications, or used solely for self-enhancement purposes. We also note that motivation ratings for positive models were above the midpoint of the scale, suggesting that these participants believed that they would be at least somewhat motivated to improve their health-related behaviors if confronted with examples of healthy, active individuals of their own age. Thus, consistent with our findings in Study 2, older adults perceived both positive and negative health-related role models to be motivating.

**General Discussion**

Taken together, the present studies suggest that preferences for positive and negative health-related role models differ across the

Table 3  
*Variable Means and Standard Deviations (Study 3)*

Scale	<i>M</i>	<i>SD</i>
Self-Esteem	5.97	0.91
Life Satisfaction	5.27	1.07
IHLC	5.13	0.85
CHLC	3.04	1.04
PHLC	3.81	1.33
Health rating	4.11	0.61

*Note.* IHLC = Internal Health Locus of Control subscale; CHLC = Chance Health Locus of Control subscale; PHLC = Powerful Others Locus of Control subscale. (All are subscales of the Multidimensional Health Locus of Control Scale, Form A; Wallson et al., 1978.)

<sup>4</sup> There were no gender differences on any of the variables except PHLC. Male participants ( $M = 4.60, SD = 1.16$ ) reported greater perceived control over health by others than did female participants ( $M = 3.42, SD = 1.24$ ),  $F(1, 43) = 9.47, p = .004$ .

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Table 4  
*Intercorrelations Between Variables (Study 3)*

Scale	1	2	3	4	5	6	7	8	9	10
1. Motivation by positive models	—	.80***	.55***	.34**	-.04	-.20	.27†	-.02	.18	.07
2. Motivation by negative models		—	.50**	.42**	-.01	-.13	.17	-.21	.23	.04
3. Health-related promotion			—	.44***	-.14	-.08	.34*	-.37**	.34*	-.20
4. Health-related prevention				—	-.32*	-.21	.21	.12	.24	-.32*
5. Self-Esteem					—	.57***	.12	-.03	-.14	.26†
6. Life Satisfaction						—	.07	.27†	.16	.36*
7. IHLC							—	-.12	.18	-.08
8. CHLC								—	.21	.10
9. PHLC									—	-.26†
10. Health rating										—

Note. IHLC = Internal Health Locus of Control subscale; CHLC = Chance Health Locus of Control subscale; PHLC = Powerful Others Locus of Control subscale. (All are subscales of the Multidimensional Health Locus of Control Scale, Form A; Wallson et al., 1978.)

†  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

adult life span. Young adults were more likely to cite examples of positive than negative role models who had motivated them in the past (Study 1) and also reported that positive models were more motivating than were negative models (Study 2). In contrast, older participants were equally likely to cite examples of positive and negative role models who had motivated them in the past (Study 1) and reported that negative models would be just as motivating as (Study 2) or more motivating than (Study 3) positive models. Thus, whereas young individuals may be especially likely to find examples of healthy, fit individuals to be motivating, older individuals appear to find both healthy and unhealthy examples to be motivating.

We note that in both Studies 2 and 3, motivation by positive and negative models was highly correlated. Participants who reported that they planned to change their behavior after encountering the inspirational example of a fit and healthy other were also likely to report that they planned to change their behavior after encountering an out-of-shape or otherwise unhealthy other. Such individuals may simply be very health conscious, and so use both forms of role models as a means of harnessing their motivation. Conversely, people who have no interest in changing their behaviors to become healthier may be unlikely to use either a positive or a negative role model to motivate themselves. It is also possible that individuals who report being strongly motivated by both forms of role model are those who are most likely to compare themselves to others in the first place. For example, individuals who score high on a measure of social comparison orientation (SCO; Gibbons & Buunk, 1999) tend to make more comparisons than do individuals who score low on this measure; individuals high in SCO may thus be especially likely to use both forms of role model to harness their health-related motivation. In future research, it will be useful to examine the extent to which health consciousness and SCO, together with age and health-related regulatory orientation, may jointly determine the extent to which individuals are motivated by positive and negative health role models.

The results of Study 2 suggest that age differences in motivation by positive and negative role models may be at least partially driven by differences in health-related regulatory focus. Older participants had a stronger focus on preventing negative health outcomes than did younger adults, and this prevention focus, in turn, was associated with greater motivation by negative role

models. Previous research has explored the development of regulatory orientations in childhood (e.g., Higgins & Silberman, 1998). During childhood, individuals develop a particular orientation toward promotion or prevention which will determine the regulatory strategies that guide their behavior as adults (Higgins et al., 2001); however, their relative focus on achieving gains and avoiding losses may shift across the course of their life (Heckhausen, 1997). Ultimately, both chronic individual differences in regulatory goals and developmental shifts in these goals will likely determine the extent to which individuals are motivated by positive and negative health models. The present studies provide the first evidence that individuals' concern with promoting positive and preventing negative health outcomes may shift across the life span, and this change in regulatory orientation may, in turn, determine the kinds of role models that are effective in motivating behavior changes. Young adults are most likely to be oriented toward achieving health gains and so are most likely to be motivated by positive models. As individuals age, they may adopt more balanced health-related promotion and prevention strategies and so become motivated by both positive and negative models.

This research provides important evidence regarding the role of social comparison in coping with aging. Past research has suggested that individuals often use upward comparisons for self-improvement purposes (Collins, 1996; Taylor & Lobel, 1989); a better off other can provide one with information about how one can improve one's own situation. However, because upward comparisons can also be threatening, reminding individuals that they are inferior on some dimension (Wood, 1989), downward comparisons may be a more effective means through which older individuals can adjust psychologically to the aging process (Heidrich & Ryff, 1993b; Kwan, Love, Ryff, & Essex, 2003). The present studies suggest that, by activating goals to improve one's health, both upward and downward comparisons can serve an important function in promoting healthy aging. By providing examples of what individuals hope to become or what they hope to avoid, upward and downward comparisons can encourage individuals to consider how they might develop more active lifestyles, cut back on drinking or smoking, and eat a more nutritious diet.

Studies 2 and 3 focused on the impact of same-age peers on health-related motivation. We matched participants with role models on age because individuals are typically most strongly influ-

enced by comparisons with similar others (Festinger, 1954). However, in Study 1, in which participants provided examples of their own role models, younger individuals reported being motivated by role models who were, on average, 15 years older than themselves. Thus, young adults may experience strong responses to comparisons with middle-aged adults. Other evidence suggests that older individuals can be affected by comparisons to younger individuals (e.g., Heckhausen & Krueger, 1993; Reis-Bergen, Gibbons, Gerard, & Ybema, 2000). Given that individuals, both young and older, are typically exposed to potential comparison others from a wide range of ages, it will be useful in future research to examine more closely the impact of comparison targets of different ages on health-related motivation.

### *Limitations of the Present Research and Future Directions*

We note that in the present studies, we focused on the role models that individuals selected in their everyday lives (Study 1) and on participants' perceptions of the motivating impact of positive and negative models (Studies 2 and 3). Thus, we relied on individuals' beliefs about the effects of role models rather than testing the actual impact of these models. In addition, these studies examined the extent to which social comparisons can activate goals to change behaviors; however, we did not measure the actual behavior changes that such comparisons might elicit. Although intentions to engage in a behavior do predict behavior changes (e.g., Ajzen, 1991, 1996; Ajzen & Madden, 1986), this relationship is far from perfect. The present research does provide evidence regarding the kinds of role models that participants in different age groups believe will be motivating and those that they are likely to recall using in the past. To the extent that negative models are more meaningful and accessible for older than for young adults, older adults may be more likely to recruit examples of negative models when they are engaging their motivation to make a behavior change. However, it may be that individuals' theories about how role models will affect them do not accurately reflect the actual impact that such models will have on their behaviors. Thus, in future research, it will be important to assess the actual behaviors that are activated when young and older individuals are exposed to positive and negative models.

The design of the present studies also raises issues regarding possible cohort effects. Young and older adults may use different role models simply because they have been exposed to different examples and different health messages in the course of their lifetimes. These groups may differ as a result of changing trends in the societal emphasis placed on the importance of a healthy diet and regular exercise. It is interesting that young adults in Study 1 tended to nominate a parent as an example of a positive role model, whereas older adults tended to nominate a parent as an example of a negative role model. It may be that the baby-boomer parents of the young adults in this sample were indeed more health conscious than were the parents of older adults and, consequently, served as more positive role models.

In addition, we note that the present studies did not fully examine the possibility of gender differences. Although we detected no important gender differences in our studies, our samples in Studies 2 and 3 included more female than male participants. With a larger sample size, it would be possible in future studies to

examine with greater accuracy possible gender differences in both regulatory focus and responses to role models.

The present research findings focus on two specific age groups—young adults between 18 and 25 years of age and older adults between 60 and 75 years of age. Because we did not explore the regulatory focus or role model preferences of individuals between the ages of 25 and 60, it is unclear when developmental shifts in these variables occur. It may be that health-related prevention becomes important around the time individuals reach middle age and that negative models thus become more influential at that time. Moreover, because we did not examine adults over the age of 75, it is unclear whether the pattern of results we obtained would be maintained beyond this stage of life. In addition, we note that the older adults in our sample were community-dwelling adults who were able to transport themselves to our lab; they reported generally high levels of personal control and also rated their current health positively. It may be that a different pattern of results would emerge in a sample that included older adults with a greater range of health concerns. Rather than finding role models to be motivating, older adults who are experiencing serious problems with health or mobility, or have less personal autonomy, might find examples of very healthy others to be depressing, because they do not expect to improve their own health, and might find examples of very unhealthy others to be discouraging, because they do not believe they will be able to avoid a similar outcome. Indeed, recent evidence suggests that downward comparisons to poorly coping peers can have a negative impact on the life satisfaction of frail, elderly individuals if they identify with the poorly coping other (Frieswijk, Buunk, Steverink, & Slaets, 2004). In future research, it will be useful to examine regulatory focus across the full adult life span, sampling individuals with a greater range of health concerns and exploring how changing patterns in regulatory orientation affect the impact of positive and negative role models.

### *Conclusions*

By making changes to their lifestyles, adopting healthier eating and exercise habits, and cutting back on such damaging behaviors as smoking and drug use, individuals can reduce their risk of experiencing health problems such as diabetes, heart disease, osteoporosis, and some forms of cancer (Health Canada, 1999). Social comparisons with healthy and unhealthy role models can motivate individuals to consider making changes, encouraging them to contemplate the benefits of a healthy lifestyle and the costs of unhealthy habits. If young adults focus only on positive examples, without considering the possibility that they may eventually experience health problems, they may neglect to take important preventative steps that could ensure a healthier future. Moreover, the older segment of the North American population is expected to grow dramatically in the next decade (Novak & Campbell, 2001; Whitbourne, 2001); consequently, it is becoming increasingly important to find ways of encouraging older individuals to adopt health-related behaviors that will help them to enjoy a high quality of life. By understanding how health-related exemplars can motivate individuals across the life span, we can design more effective health-related interventions for individuals of all ages.

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